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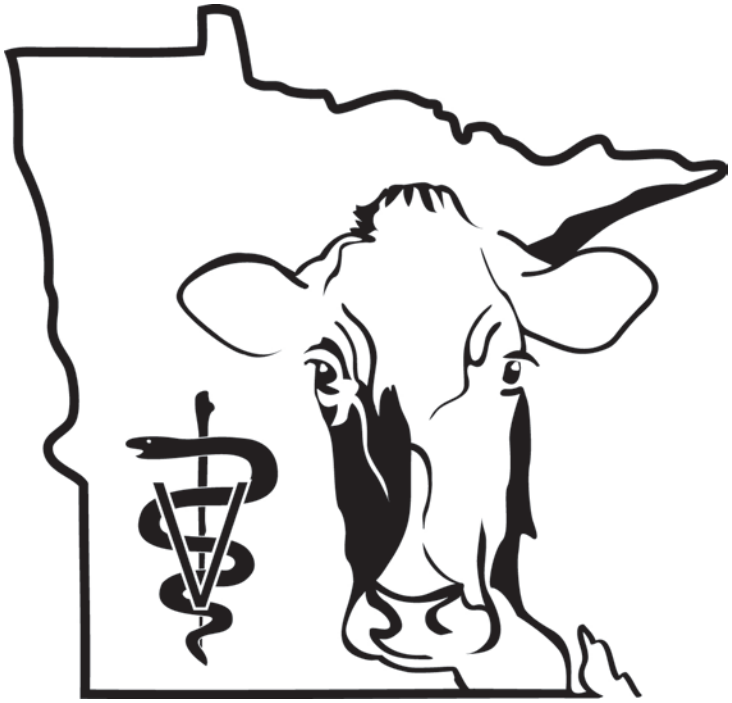

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Treatment of Rostral Jaw Fractures in Cattle

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Rostral mandibular fractures are not uncommon in cattle and are actually readily managed in the field, despite their apparent complexity. Due to the type of forces placed upon the jaw and the excellent vascularity of the region, fractures involving the incisor region and interdental space generally heal rapidly and well following wire fixation.

These fractures are generally due to trauma and can occur in any age group : from neonates being extracted by force on the mandible to adult cows having a run-in with a front end loader or other machinery. The fractures are invariably open and most often bilateral. Affected cattle may drool saliva mixed with blood, have a protruded tongue and possibly an obvious deviation to the jaw. Maxillary fractures may be associated with additional head trauma.

Several methods are employed to repair other types of jaw fractures, including plates, pins, and external fixateurs. However, due to the location of tooth roots, wire fixation is usually the preferred method for rostral fractures. Preoperative diagnostics should include a good oral examination to determine if any teeth have been damaged or if there is any risk of more caudal fractures. Radiographs are ideal but may not be necessary in many cases. Preoperative antibiotics are usually given and continued for 5-7 days. Anti-inflammatory drugs are helpful in speeding the animal's return to a good appetite.

Procedure : 18 gauge wire is used to secure the incisors (or dental pad) to the molars using figure 8 patterns.

Anesthesia : Repair may be done standing or under injectable anesthesia. Calves may be sedated using a combination of xylazine (0.02 mg/lb) and ketamine (1 mg/lb). Redosing may be needed every 10-20 minutes and is usually done at half of the induction dose. (Close attention needs to be paid to the depth of anesthesia; calves will become apneic for a few seconds following the ketamine.) Adult cattle can be done in a chute with some type of head restraint.

Local block of the mental nerve may be used in all ages. This nerve exits the lower jaw on the lateral surface at the mental foramen. The foramen is palpated by elevating the tendon of the depressor labii inferioris muscle. A 20 gauge, 2.5cm needled is used to deposit 5-10 ml of lidocaine at the exit site and an additional 2-5 ml into the canal. This will help anesthetize the lower lip and jaw potentially as far back as the first molar. The nerve may also be blocked more proximally by blocking it on the medial surface of the vertical ramus of the mandible at the mandibular foramen. This foramen is located at the intersection of an imaginary line drawn along the occlusal surface of the lower teeth and a vertical line from the lateral canthus of the eye. Before injection, check the approximate depth of injection required by noting the distance from the ventral border of the vertical ramus of the mandible to the mandibular foramen. A 15 cm 18 gauge needle is inserted along the ventromedial aspect of the mandible and direced along the medial surface of the mandible to the approximate location of hte foamen. Inject 15-20 ml of

lidocaine or mepivicaine. This block desensities the ipsilateral lower lips, incisors, premolars, molars, and rostral tongue. Cutaneous sensation is still present.

Technical hints:

- meticulous debridement permits best reduction (water pik or 20 cc syringe + 18 ga needle give good water pressure)
- secure the wire around 2-3 incisors and then back to the molar region to give a securer base of pull; also wire incisors together to prevent caudal movement of incisors
- insert the wire through the bone (or under gingiva) instead of trying to loop around teeth
    - in calves this is easily done using a 14ga needle; older animals may require a pin chuck and small im pin or a small bit and a hand or power drill
    - avoid tooth roots
- the cheek tissue cannot be retracted far enough to allow easy placement of wire between the first two molars
    - use a small incision through the cheek to make the drill hole and to place the wires
    - a 14 ga needle works well as a guide for the wire; double check the direction of needle placement to ensure it can be removed once the wire is through
- once the wire is around the incisor teeth and the molar, twist the wire together in the interdental space to tighten (figure 8 appearance)
- plan on breaking at least one wire when tightening (need more time to redo it!)
- if you are concerned about wire breakage, the wires can be supported by dental grade methylmethacrylate
    - can be used to cover the wires after placement or wires can be inserted into the methylmethacrylate during wire placement
    - not often necessary if animals can be prevented from grazing, etc until the bone is stronger
- amputation of the rostral jaw may be an option for severely comminuted fractures, ones with minimal vascular supply, or nonhealing fracture

Postoperative care:

- antibiotics may be continued for 4-5 days, until granulation tissue formation can occur
- lavage the wire area if possible to prevent erosions from impacted food
- check wires daily if possible; remove if broken
- remove wires at 4-6 weeks
- the mucosa will be damage from the wires but will heal rapidly

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